

Appendix S. Search for Optimum Flux Function to Fit Modeled and Measured  
Data for Lompoc Applications 3 and 4.





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## MEMORANDUM

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DATE: December 7, 2001

SUBJECT: SEARCH FOR OPTIMUM FLUX FUNCTION TO FIT MODELED AND  
MEASURED DATA FOR LOMPOC APPLICATIONS 3 AND 4

You provided me with model estimates for two contiguous applications of metam sodium. The modeling used an assumed flux of 100ug/m<sup>2</sup>s. The applications were designated as application 3 and 4, and were at a rate of 56 gallons per acre, drip application to 10 acres each. Table 1 lists the period, length of each period (h), cumulative time (h), sample location designator, two columns of numerical designators, model-estimated values (ug/m<sup>3</sup>), measured values (including those set to ½ detection or reporting limit).

The idea of this spreadsheet analysis was to assume a flux function of the form

$$y = Ie^{-Rt} \quad (0.1)$$

where y is the flux (g/m<sup>2</sup>d), I is an initial value (g/m<sup>2</sup>d), R is the time constant (1/day), and t is time (day). An optimization procedure is then used to adjust the modeled values according to this flux function, while varying the 2 functional parameters to achieve the best fit against the measured data.

As a first step, I determined the application rate in terms of g/m<sup>2</sup> of methyl isothiocyanate (MITC). The molecular weight of MITC and metam sodium is 73.1g and 128.17g, respectively. There are 3.18 lbs of metam sodium per gallon. Therefore, using the application rate of 56 gallons per acre, gives the following expression for the g/m<sup>2</sup> of MITC that was applied.

$$AR = \frac{56 \frac{\text{gal}}{\text{acre}} \times 3.18 \frac{\text{lb}}{\text{gal}} \times \frac{73.1}{128.17} \times 454 \frac{\text{g}}{\text{lb}}}{4047 \frac{\text{m}^2}{\text{acre}}} = 11.4 \frac{\text{g}}{\text{m}^2} \quad (0.2)$$



I assumed that half of the MITC volatilized and that most of the volatilization occurred in about 3 days. This leads to rough initial estimates of  $I=6.4$  and  $R=1.12$ . These estimates are reasonable with respect to the 50% volatilization assumption because

$$\int_0^{\infty} Ie^{-Rt} dt = \frac{I}{-R} e^{-Rt} \Big|_0^{\infty} = \frac{6.4}{1.12} = 5.7 \quad (0.3)$$

For each period from  $t_1$  to  $t_2$ , the average volatilization is  $\frac{I}{R} \frac{[e^{-Rt_1} - e^{-Rt_2}]}{t_2 - t_1}$ , which is in units of g/m2d. Since the model uses ug/m2s as flux units, it is necessary to convert from g/m2s to ug/m2s. The factor to multiply by is  $1e6/(24*3600)=11.57$ .

The game plan for the spreadsheet is to define a column for the average flux on field 3 and field 4. This average flux will be used in conjunction with the assumed flux of 100 ug/m2s, which was used in the model, to adjust the modeled air concentrations. This adjustment is allowed because of the proportional relationship between flux and concentration. Since both fields were the same size, and applied with the same rate, and were contiguous, and since the receptors are located at some distance from the field, I effectively used the same field for both applications. I do not expect that explicitly modeling the second field would make any appreciable difference since the locations were nearly the same.

After adjusting the model estimated air concentrations, then the squared differences between the modeled and measured values are summed and this sum is the object of minimization, using the 'Solver' feature in Excel (2000).  $I$  and  $R$  are the parameters to vary in this procedure.

The spreadsheet shows the average flux from field 1 and field 2 (in units of g/m2h because I used the hours in the denominator since that is how the information was originally provided). These fluxes are summed and converted to ug/m2s and used to adjust the modeled values. For each time period there are 5 measurements. Within each time period, the adjustment is the same and utilizes the parameters  $I$  and  $R$  in the upper left of the spreadsheet (at locations D1 and D2).

I tried optimizing with respect to the sum of squares of individual measurements and also with respect to the sum of squares of period average measurements. I also tried setting the 'artificial' measured values, which were derived by setting non-detects equal to  $\frac{1}{2}$  of the detection limit and trace values as  $\frac{1}{2}$  of the reporting limit, to zero. I will only report here on the scenario, which used the period average values and included the artificial measured values. The other three scenarios (individual values, setting and not setting artificial values to 0, average period values setting artificial values to 0) gave similar results.

## Results

The results in terms of the derived flux function are not reasonable. The optimization gave values of  $I=24734\text{g/m}^2$  and  $R=17.848$ . This does not make sense physically since it implies an extremely high flux in the first few minutes of application, quickly descending to practically 0 (Figure 1). More importantly, it implies that  $1390\text{ g/m}^2$  ( $=24374/17.8$ ) of MITC volatilized, which far exceeds the applied amount of  $11.4\text{g/m}^2$ .

Figure 2 compares the modeled and measured period averages, both for the optimized function and for the 'reasonable' function, which used values of  $I=6.4$  and  $R=1.12$ . Figure 2A shows the time course of average period measured values, where the non-detects are estimated at half the detection limit, and trace reports are estimated at half the reporting limit. Also plotted are the time course of modeled values, using the optimized parameters of  $I=24734$  and  $R=17.848$ , and modeled values using the 'reasonable' flux function consisting of  $I=6.4$  and  $R=1.12$ . The reasonable flux function generally overestimates measured values with one very high overestimate at about 35 hours. The optimized flux function performs better, tracking the measured values fairly well (Figure 2A). When the measured values are used as the x-axis and the modeled values as the y-axis, the previous generalization is clearer (Figure 2B). The optimized function plot in Figure 2B is dominated by a single high point, while the remaining points cluster near low values. The reasonable function has a looser cluster of points at low values, but two very widely spread points, one near (0.02, 0.5), and the other near (0.14, 0.07). The latter point for the optimized function corresponds to (0.14, 0.12).

## Conclusion

It is possible that a different function would have performed better. A logical choice would be a function, which starts at 0, reaches a peak, and then diminishes. For example, the lognormal function behaves this way. However, at this time, I do not know how to quickly get Excel to integrate a lognormal function, because no analytic solution exists for the integral. Another possibility is that the use of positive values for non-detects and traces may throw off the fitting exercise. However, though I did not report the results here, when I set the non-detects and traces to zero, the results were similar to the case reported on in this memorandum. Another possible explanation is that the gaussian model does not properly account for air dispersion in the Lompoc Valley. A final possibility is that other sources of MITC occurred during the monitoring process besides those which were included in the model.

An appendix to this memorandum contains the formulas used in these calculations.

## Attachments

cc: Dr. Kean S. Goh, Agricultural Program Supervisor IV (w/Attachments)

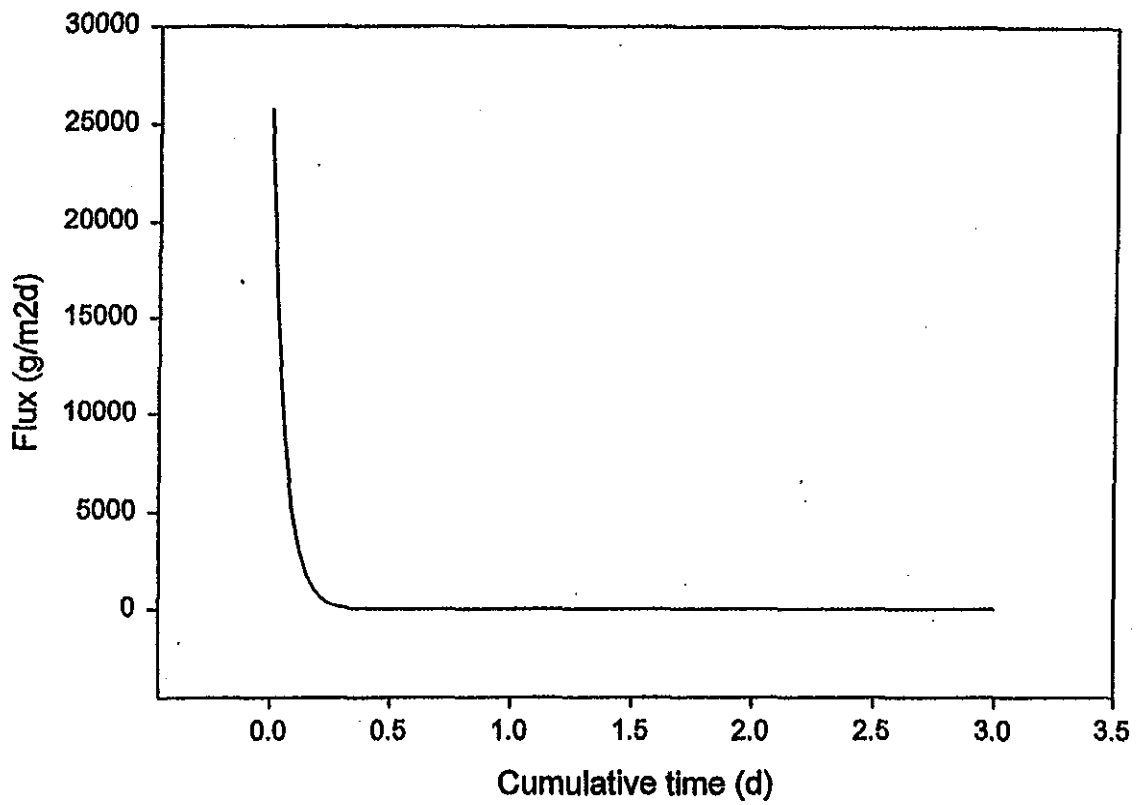


Figure 1. Flux function when period averages optimized and artificial values used. Parameters are  $I=24375$  and  $R=17.8$ .

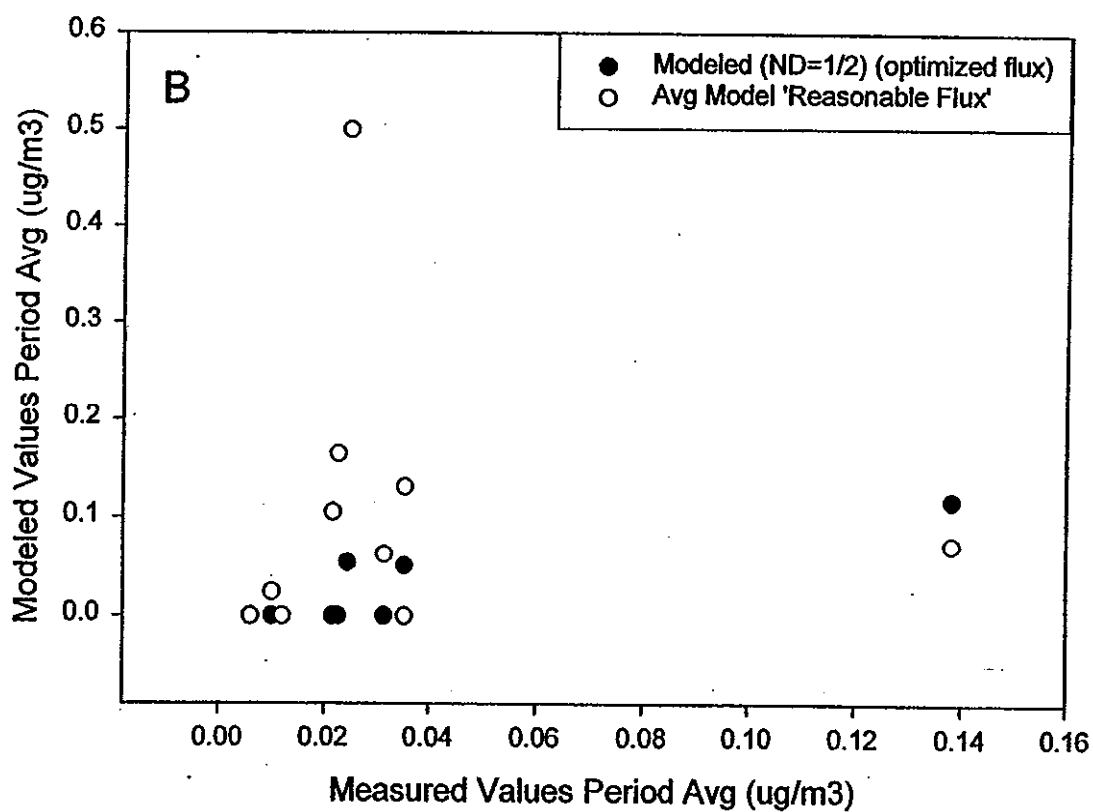
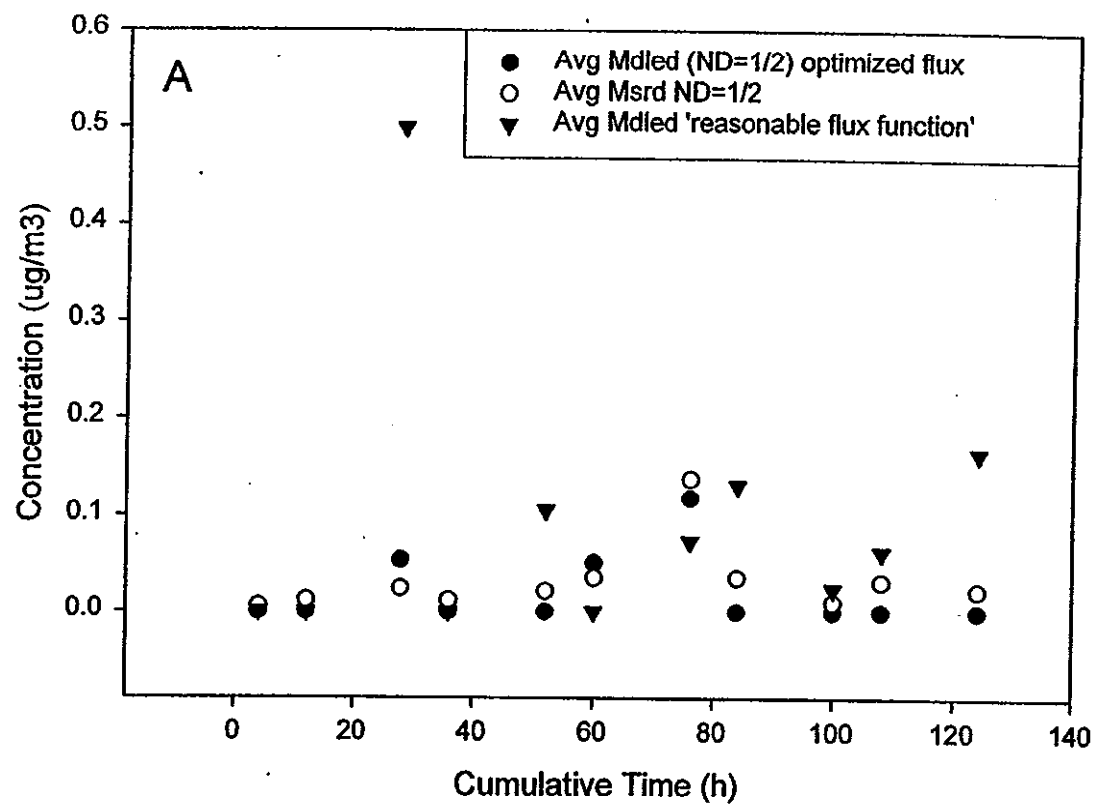


Figure 2. Modeled and measured values compared over time (a). Modeled values compared to measured (b). 'Reasonable flux' function had parameters of  $I=6.4$  and  $R=-1.12$ .

Table 1. Simulated modeling calculations to find an optimum flux function of the form  $y=\exp(Rt)$ 

I	24734.88 g/m2								0.311959904	0.3134			0.005148 SSQ
R	-17.8448 1/d			g/m2h	field 1	field 2	ug/m2s	fld1+fld2			avg model	avg msrd	
This uses the average values for each period and uses the half detection limit estimates													
1b application only (4hrs)													
1	4	4	NW	731353	3838191	0	328.8234	0	91314.25	0	0.006	0.000036 * 0	0
			NE	733785	3838118	0	328.8234	0	91314.25	0	0.006	0.000038 * 0	0
			W	731386	3836540	0	328.8234	0	91314.25	0	0.006	0.000036 * 0	0
			C	733174	3835789	0	328.8234	0	91314.25	0	0.006	0.000036 * 0	0
			SW	731392	3835146	0	328.8234	0	91314.25	0	0.006	0.000036 * 0	0
2	8	12	NW	731353	3838191	0	8.829265	0	2451.887	0	0.012	0.000144 * 0	0
			NE	733785	3838118	0	8.829265	0	2451.887	0	0.012	0.000144 * 0	0
			W	731386	3836540	0	8.829265	0	2451.887	0	0.012	0.000144 * 0	0
			C	733174	3835789	0	8.829265	0	2451.887	0	0.012	0.000144 * 0	0
			SW	731392	3835146	0	8.829265	0	2451.887	0	0.012	0.000144 * 0	0
3	16	28	NW	731353	3838191	0.00047	0.011554	0	3.208522	1.51E-05	0.047	0.002207563	1
			NE	733785	3838118	0	0.011554	0	3.208522	0	0.012	0.000144 * 0	0
			W	731386	3836540	6.56323	0.011554	0	3.208522	0.210583	0.039	0.029440626	1
			C	733174	3835789	1.81418	0.011554	0	3.208522	0.058208	0.012	0.002135214	0
			SW	731392	3835146	0	0.011554	0	3.208522	0	0.012	0.000144 * 0	0
4	8	36	NW	731353	3838191	0	1.57E-07	0	4.36E-05	0	0.012	0.000144 * 0	0
			NE	733785	3838118	0	1.57E-07	0	4.36E-05	0	0.012	0.000144 * 0	0
			W	731386	3836540	0	1.57E-07	0	4.36E-05	0	0.012	0.000144 * 0	0
			C	733174	3835789	0	1.57E-07	0	4.36E-05	0	0.012	0.000144 * 0	0
			SW	731392	3835146	0	1.57E-07	0	4.36E-05	0	0.012	0.000144 * 0	0
5	16	52	NW	731353	3838191	5.41019	2.06E-10	0	5.71E-08	3.09E-09	0.006	3.6E-05 * 0	9.63E-18
			NE	733785	3838118	0	2.06E-10	0	5.71E-08	0	0.006	0.000036 * 0	0
			W	731386	3836540	0	2.06E-10	0	5.71E-08	0	0.084	0.007056	1
			C	733174	3835789	0	2.06E-10	0	5.71E-08	0	0.008	0.000036 * 0	0
			SW	731392	3835146	0	2.06E-10	0	5.71E-08	0	0.006	0.000036 * 0	0
6	8	60	NW	731353	3838191	0.00053	2.79E-15	172.8118	47989.83	0.254346	0.051	0.041348635 * 0	0.064892
			NE	733785	3838118	0	2.79E-15	172.8118	47989.83	0	0.051	0.002601 * 0	0
			W	731386	3836540	0	2.79E-15	172.8118	47989.83	0	0.051	0.002601 * 0	0
			C	733174	3835789	0	2.79E-15	172.8118	47989.83	0	0.012	0.000144 * 0	0
			SW	731392	3835146	0	2.79E-15	172.8118	47989.83	0	0.012	0.000144 * 0	0
7	16	76	NW	731353	3838191	0.8985	3.66E-18	0.22614	62.79916	0.66426	0.23	0.111723382	1
			NE	733785	3838118	0.04104	3.66E-18	0.22614	62.79916	0.025773	0.069	0.001888593	1
			W	731386	3836540	0	3.66E-18	0.22614	62.79916	0	0.29	0.0841	1
			C	733174	3835789	0	3.66E-18	0.22614	62.79916	0	0.026	0.000676 * 0	0
			SW	731392	3835146	0.00146	3.66E-18	0.22614	62.79916	0.000917	0.076	0.005637477	1
8	8	84	NW	731353	3838191	0	4.97E-23	3.07E-06	0.000854	0	0.012	0.000144 * 0	0
			NE	733785	3838118	0	4.97E-23	3.07E-06	0.000854	0	0.012	0.000144 * 0	0
			W	731386	3836540	1.96199	4.97E-23	3.07E-06	0.000854	1.69E-05	0.051	0.002599275 * 0	2.86E-10
			C	733174	3835789	0.89933	4.97E-23	3.07E-06	0.000854	7.68E-06	0.051	0.002600217 * 0	5.89E-11
			SW	731392	3835146	0.10951	4.97E-23	3.07E-06	0.000854	9.35E-07	0.051	0.002600905 * 0	8.74E-13
9	16	100	NW	731353	3838191	0.00563	6.5E-26	4.02E-09	1.12E-06	6.29E-11	0.006	3.6E-05 * 0	3.85E-21
			NE	733785	3838118	0	6.5E-26	4.02E-09	1.12E-06	0	0.006	0.000036 * 0	0
			W	731386	3836540	0	6.5E-26	4.02E-09	1.12E-06	0	0.026	0.000676 * 0	0
			C	733174	3835789	0	6.5E-26	4.02E-09	1.12E-06	0	0.006	0.000036 * 0	0
			SW	731392	3835146	0.94173	6.5E-26	4.02E-09	1.12E-06	1.05E-08	0.006	3.59999E-05 * 0	1.11E-16
10	8	108	NW	731353	3838191	0	8.84E-31	5.47E-14	1.52E-11	0	0.051	0.002601 * 0	0
			NE	733785	3838118	0	8.84E-31	5.47E-14	1.52E-11	0	0.012	0.000144 * 0	0
			W	731386	3836540	2.96384	8.84E-31	5.47E-14	1.52E-11	4.5E-13	0.051	0.002601 * 0	2.03E-25
			C	733174	3835789	0.48258	8.84E-31	5.47E-14	1.52E-11	7.33E-14	lost	5.37E-27	
			SW	731392	3835146	0.5349	8.84E-31	5.47E-14	1.52E-11	8.12E-14	0.012	0.000144 * 0	6.6E-27
11	16	124	NW	731353	3838191	0.39657	1.16E-33	7.15E-17	1.99E-14	7.88E-17	0.006	3.6E-05 * 0	6.21E-33
			NE	733785	3838118	0.00074	1.16E-33	7.15E-17	1.99E-14	1.47E-19	0.026	0.000676 * 0	2.16E-38
			W	731386	3836540	1.2083	1.16E-33	7.15E-17	1.99E-14	2.4E-16	0.049	0.002401	1
			C	733174	3835789	1.27315	1.16E-33	7.15E-17	1.99E-14	2.63E-16	0.026	0.000676 * 0	6.4E-32
			SW	731392	3835146	16.93565	1.16E-33	7.15E-17	1.99E-14	3.36E-15	0.006	3.6E-05 * 0	1.13E-29

Table 2. Simulated modeling calculations when 'reasonable flux function' is used. Function is  $y=6.4\exp(-1.12t)$ 

I	6.4 g/m2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
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Appendix 1. Spreadsheet formulas used to calculate flux from negative exponential function and adjust modeled air concentrations accordingly.

I		24755.0 g/m2		g/m2h		field 1		field 2		light:Gn		=SUM(A8:B8B9)		=SUM(A8:B8B9)		avg model		avg mard		=SUM(A8:B8B9)	
Th		r		-17.844 1/d						Sct1+852		This uses the average									
1		15a																			
1 4		NW	731353	3636181	0	=(-40S18042)((E0P(S022+9C3524)-E0P(S022+9C31024)))/S035	0	=(-16+85)/277.7	=(-59100)/96	0.006	=(-16+85)/2	0	=(-16+85)/2	=AVERAGE(S0349)	=AVERAGE(L0314)	=(-16+85)/2					
		NE	731765	3636115	0	=(-40S18042)((E0P(S022+9C3524)-E0P(S022+9C31024)))/S035	0	=(-16+85)/277.7	=(-59100)/96	0.006	=(-16+85)/2	0	=(-16+85)/2								
		W	731366	3636540	0	=(-40S18042)((E0P(S022+9C3524)-E0P(S022+9C31024)))/S035	0	=(-17+87)/277.7	=(-77100)/97	0.006	=(-17+87)/2	0	=(-17+87)/2								
		C	731714	3635766	0	=(-40S18042)((E0P(S022+9C3524)-E0P(S022+9C31024)))/S035	0	=(-16+85)/277.7	=(-59100)/96	0.006	=(-16+85)/2	0	=(-16+85)/2								
		SW	731362	3636146	0	=(-40S18042)((E0P(S022+9C3524)-E0P(S022+9C31024)))/S035	0	=(-16+85)/277.7	=(-59100)/96	0.006	=(-16+85)/2	0	=(-16+85)/2								
2 8		NW	731353	3636181	0	=(-S01818042)((E0P(S022+9C3524)-E0P(S022+9C31024)))/S0310	0	=(-110+411)/277.7	=(-42100)/910	0.012	=(-110+411)/2	0	=(-110+411)/2	=AVERAGE(K10K14)	=AVERAGE(L10L14)	=(-110+411)/2					
		NE	731765	3636115	0	=(-S01818042)((E0P(S022+9C3524)-E0P(S022+9C31024)))/S0310	0	=(-111+411)/277.7	=(-41100)/911	0.012	=(-111+411)/2	0	=(-111+411)/2								
		W	731366	3636540	0	=(-S01818042)((E0P(S022+9C3524)-E0P(S022+9C31024)))/S0310	0	=(-112+412)/277.7	=(-42100)/912	0.012	=(-112+412)/2	0	=(-112+412)/2								
		C	731714	3635766	0	=(-S01818042)((E0P(S022+9C3524)-E0P(S022+9C31024)))/S0310	0	=(-113+413)/277.7	=(-43100)/913	0.012	=(-113+413)/2	0	=(-113+413)/2								
		SW	731362	3636146	0	=(-S01818042)((E0P(S022+9C3524)-E0P(S022+9C31024)))/S0310	0	=(-114+414)/277.7	=(-44100)/914	0.012	=(-114+414)/2	0	=(-114+414)/2								
3 16		NW	731353	3636181	0.00047	=(-S01818042)((E0P(S022+9C31024)-E0P(S022+9C31024)))/S0315	0	=(-115+415)/277.7	=(-45100)/915	0.047	=(-115+415)/2	1	=(-115+415)/2	=AVERAGE(K15K19)	=AVERAGE(L15L19)	=(-115+415)/2					
		NE	731765	3636115	0	=(-S01818042)((E0P(S022+9C31024)-E0P(S022+9C31024)))/S0315	0	=(-116+416)/277.7	=(-46100)/916	0.012	=(-116+416)/2	0	=(-116+416)/2								
		W	731366	3636540	0.00323	=(-S01818042)((E0P(S022+9C31024)-E0P(S022+9C31024)))/S0315	0	=(-117+417)/277.7	=(-47100)/917	0.038	=(-117+417)/2	1	=(-117+417)/2								
		C	731714	3635766	1.81415	=(-S01818042)((E0P(S022+9C31024)-E0P(S022+9C31024)))/S0315	0	=(-118+418)/277.7	=(-48100)/918	0.012	=(-118+418)/2	0	=(-118+418)/2								
		SW	731362	3636146	0	=(-S01818042)((E0P(S022+9C31024)-E0P(S022+9C31024)))/S0315	0	=(-119+419)/277.7	=(-49100)/919	0.012	=(-119+419)/2	0	=(-119+419)/2								
4 6		NW	731353	3636181	0	=(-S01818042)((E0P(S022+9C31824)-E0P(S022+9C32024)))/S0320	0	=(-120+420)/277.7	=(-50100)/920	0.012	=(-120+420)/2	0	=(-120+420)/2	=AVERAGE(K20K24)	=AVERAGE(L20L24)	=(-120+420)/2					
		NE	731765	3636115	0	=(-S01818042)((E0P(S022+9C31824)-E0P(S022+9C32024)))/S0320	0	=(-121+421)/277.7	=(-51100)/921	0.012	=(-121+421)/2	0	=(-121+421)/2								
		W	731366	3636540	0	=(-S01818042)((E0P(S022+9C31824)-E0P(S022+9C32024)))/S0320	0	=(-122+422)/277.7	=(-52100)/922	0.012	=(-122+422)/2	0	=(-122+422)/2								
		C	731714	3635766	0	=(-S01818042)((E0P(S022+9C31824)-E0P(S022+9C32024)))/S0320	0	=(-123+423)/277.7	=(-53100)/923	0.012	=(-123+423)/2	0	=(-123+423)/2								
		SW	731362	3636146	0	=(-S01818042)((E0P(S022+9C31824)-E0P(S022+9C32024)))/S0320	0	=(-124+424)/277.7	=(-54100)/924	0.012	=(-124+424)/2	0	=(-124+424)/2								
5 18		NW	731353	3636181	5.41018	=(-S01818042)((E0P(S022+9C33024)-E0P(S022+9C33224)))/S0325	0	=(-125+425)/277.7	=(-55100)/925	0.006	=(-125+425)/2	0	=(-125+425)/2	=AVERAGE(K25K29)	=AVERAGE(L25L29)	=(-125+425)/2					
		NE	731765	3636115	0	=(-S01818042)((E0P(S022+9C33024)-E0P(S022+9C33224)))/S0325	0	=(-126+426)/277.7	=(-56100)/926	0.006	=(-126+426)/2	0	=(-126+426)/2								
		W	731366	3636540	0	=(-S01818042)((E0P(S022+9C33024)-E0P(S022+9C33224)))/S0325	0	=(-127+427)/277.7	=(-57100)/927	0.004	=(-127+427)/2	1	=(-127+427)/2								
		C	731714	3635766	0	=(-S01818042)((E0P(S022+9C33024)-E0P(S022+9C33224)))/S0325	0	=(-128+428)/277.7	=(-58100)/928	0.006	=(-128+428)/2	0	=(-128+428)/2								
		SW	731362	3636146	0	=(-S01818042)((E0P(S022+9C33024)-E0P(S022+9C33224)))/S0325	0	=(-129+429)/277.7	=(-59100)/929	0.006	=(-129+429)/2	0	=(-129+429)/2								
6 8		NW	731353	3636181	0.00023	=(-S01818042)((E0P(S022+9C3524)-E0P(S022+9C33024)))/S0330	0	=(-130+430)/277.7	=(-60100)/930	0.051	=(-130+430)/2	0	=(-130+430)/2	=AVERAGE(K30K34)	=AVERAGE(L30L34)	=(-130+430)/2					
		NE	731765	3636115	0	=(-S01818042)((E0P(S022+9C3524)-E0P(S022+9C33024)))/S0330	0	=(-131+431)/277.7	=(-61100)/931	0.051	=(-131+431)/2	0	=(-131+431)/2								
		W	731366	3636540	0	=(-S01818042)((E0P(S022+9C3524)-E0P(S022+9C33024)))/S0330	0	=(-132+432)/277.7	=(-62100)/932	0.051	=(-132+432)/2	0	=(-132+432)/2								
		C	731714	3635766	0	=(-S01818042)((E0P(S022+9C3524)-E0P(S022+9C33024)))/S0330	0	=(-133+433)/277.7	=(-63100)/933	0.012	=(-133+433)/2	0	=(-133+433)/2								
		SW	731362	3636146	0	=(-S01818042)((E0P(S022+9C3524)-E0P(S022+9C33024)))/S0330	0	=(-134+434)/277.7	=(-64100)/934	0.012	=(-134+434)/2	0	=(-134+434)/2								
7 16		NW	731353	3636181	0.0005	=(-S01818042)((E0P(S022+9C33024)-E0P(S022+9C33924)))/S0335	0	=(-135+435)/277.7	=(-65100)/935	0.23	=(-135+435)/2	1	=(-135+435)/2	=AVERAGE(K35K39)	=AVERAGE(L35L39)	=(-135+435)/2					
		NE	731765	3636115	0.0104	=(-S01818042)((E0P(S022+9C33024)-E0P(S022+9C33924)))/S0335	0	=(-136+436)/277.7	=(-66100)/936	0.006	=(-136+436)/2	0	=(-136+436)/2								
		W	731366	3636540	0	=(-S01818042)((E0P(S022+9C33024)-E0P(S022+9C33924)))/S0335	0	=(-137+437)/277.7	=(-67100)/937	0.23	=(-137+437)/2	1	=(-137+437)/2								
		C	731714	3635766	0	=(-S01818042)((E0P(S022+9C33024)-E0P(S022+9C33924)))/S0335	0	=(-138+438)/277.7	=(-68100)/938	0.006	=(-138+438)/2	0	=(-138+438)/2								
		SW	731362	3636146	0.00146	=(-S01818042)((E0P(S022+9C33024)-E0P(S022+9C33924)))/S0335	0	=(-139+439)/277.7	=(-69100)/939	0.076	=(-139+439)/2	1	=(-139+439)/2	=AVERAGE(K40K44)	=AVERAGE(L40L44)	=(-139+439)/2					
8 6		NW	731353	3636181	0	=(-S01818042)((E0P(S022+9C3524)-E0P(S022+9C34024)))/S0340	0	=(-140+440)/277.7	=(-70100)/940	0.012	=(-140+440)/2	0	=(-140+440)/2	=AVERAGE(K40K44)	=AVERAGE(L40L44)	=(-140+440)/2					
		NE	731765	3636115	0	=(-S01818042)((E0P(S022+9C3524)-E0P(S022+9C34024)))/S0340	0	=(-141+441)/277.7	=(-71100)/941	0.012	=(-141+441)/2	0	=(-141+441)/2								
		W	731366	3636540	1.98199	=(-S01818042)((E0P(S022+9C3524)-E0P(S022+9C34024)))/S0340	0	=(-142+442)/277.7	=(-72100)/942	0.061	=(-142+442)/2	0	=(-142+442)/2								
		C	731714	3635766	0.00033	=(-S01818042)((E0P(S022+9C3524)-E0P(S022+9C34024)))/S0340	0	=(-143+443)/277.7	=(-73100)/943	0.051	=(-143+443)/2	0	=(-143+443)/2								
		SW	731362	3636146	0.10051	=(-S01818042)((E0P(S022+9C3524)-E0P(S022+9C34024)))/S0340	0	=(-144+444)/277.7	=(-74100)/944	0.051	=(-144+444)/2	0	=(-144+444)/2								
9 16		NW	731353	3636181	0.00093	=(-S01818042)((E0P(S022+9C34024)-E0P(S022+9C34924)))/S0345	0	=(-145+445)/277.7	=(-75100)/945	0.006	=(-145+445)/2	0	=(-145+445)/2	=AVERAGE(K45K49)	=AVERAGE(L45L49)	=(-145+445)/2					
		NE	731765	3636115	0	=(-S01818042)((E0P(S022+9C34024)-E0P(S022+9C34924)))/S0345	0	=(-146+446)/277.7	=(-76100)/946	0.006	=(-146+446)/2	0	=(-146+446)/2								
		W	731366	3636540	0	=(-S01818042)((E0P(S022+9C34024)-E0P(S022+9C34924)))/S0345	0	=(-147+447)/277.7	=(-77100)/947	0.026	=(-147+447)/2	0	=(-147+447)/2								
		C	731714	3635766	0	=(-S01818042)((E0P(S022+9C34024)-E0P(S022+9C34924)))/S0345	0	=(-148+448)/277.7	=(-78100)/948	0.006	=(-148+448)/2	0	=(-148+448)/2								
		SW	731362	3636146	0.04173	=(-S01818042)((E0P(S022+9C34024)-E0P(S022+9C34924)))/S0345	0	=(-149+449)/277.7	=(-79100)/949	0.006	=(-149+449)/2	0	=(-149+449)/2								
106 106		NW	731353	3636181	0	=(-S01818042)((E0P(S022+9C34024)-E0P(S022+9C35924)))/S0350	0	=(-150+450)/277.7	=(-80100)/950	0.051	=(-150+450)/2	0	=(-150+450)/2	=(-K50+K51+K52+K54)/4	=(-L50+L51+L52+L54)/4	=(-150+450)/2					
		NE	731765	3636115	0	=(-S01818042)((E0P(S022+9C34024)-E0P(S022+9C35924)))/S0350	0	=(-151+451)/277.7	=(-81100)/951	0.012	=(-151+451)/2	0	=(-151+451)/2								
		W	731366	3636540	2.86384	=(-S01818042)((E0P(S022+9C34024)-E0P(S022+9C35924)))/S0350	0	=(-152+452)/277.7	=(-82100)/952	0.051	=(-152+452)/2	0	=(-152+452)/2								
		C	731714	3635766	0.46236	=(-S01818042)((E0P(S022+9C34024)-E0P(S022+9C35924)))/S0350	0	=(-153+453)/277.7	=(-83100)/953	1e+4	=(-153+453)/2	0	=(-153+453)/2								
		SW	731362	3636146	0.5348	=(-S01818042)((E0P(S022+9C34024)-E0P(S022+9C35924)))/S0350	0	=(-154+454)/277.7	=(-84100)/954	0.012	=(-154+454)/2	0	=(-154+454)/2								
1116 124		NW	731353	3636181	0.30057	=(-S01818042)((E0P(S022+9C35024)-E0P(S022+9C35924)))/S0355	0	=(-155+455)/277.7	=(-85100)/955	0.006	=(-155+455)/2	0	=(-155+455)/2	=AVERAGE(K55K59)	=AVERAGE(L55L59)	=(-155+455)/2					
		NE	731765	3636115	0.00074	=(-S01818042)((E0P(S022+9C35024)-E0P(S022+9C35924)))/S0355	0	=(-156+456)/277.7	=(-86100)/956	0.026	=(-156+456)/2	0	=(-156+456)/2								
		W	731366	3636540	1.2263	=(-S01818042)((E0P(S022+9C35024)-E0P(S022+9C35924)))/S0355	0	=(-157+457)/277.7	=(-87100)/957	0.046	=(-157+457)/2	1	=(-157+457)/2								
		C	731714	3635766	1.27215	=(-S01818042)((E0P(S022+9C35024)-E0P(S022+9C35924)))/S0355	0	=(-158+458)/277.7	=(-88100)/958	0.026	=(-158+458)/2	0	=(-158+458)/2								
		SW	731362	3636146	18.83958	=(-S01818042)((E0P(S022+9C35024)-E0P(S022+9C35924)))/S0355	0	=(-159+459)/277.7	=(-89100)/959	0.006	=(-159+459)/2	0	=(-159+459)/2	=AVERAGE(K59K63)	=AVERAGE(L59L63)	=(-159+459)/2					